WHAT IS CLAIMED IS

1. A sapphire ~~monocrystal~~ single crystal body comprising a cleavage plane parallel to a plane R of the crystal on the surface.

2. A sapphire ~~monocrystal~~ single crystal body according to claim 1, wherein said ~~monocrystal~~ single crystal body is a sapphire tool comprising a sharp edge to be formed by a working plane and said cleavage plane.

3. A sapphire ~~monocrystal~~ single crystal body according to claim 1, wherein said ~~monocrystal~~ single crystal body is a ~~monocrsytal~~ single crystal sapphire substrate comprising said cleavage plane on the side face.

4. A sapphire ~~monocrystal~~ single crystal body according to claim 1, wherein said ~~monocrystal~~ single crystal body has elements such as semiconductor element, functional element and the like on the major plane, and has said cleavage plane on the side face.

5. A ~~monocrystal~~ single crystal body according to claim 1, wherein said ~~monocrystal~~ single crystal body is a ~~monocrystal~~ single crystal sapphire substrate of a laser diode comprising a semiconductor multilayer for laser light emitting use formed on the major plane, and said cleavage plane connected with the cleaved plane of the multilayer on the side face.

6. A sapphire ~~monocrystal~~ single crystal plate, wherein a working reference plane parallel or vertical to the plane R of the crystal is formed on the peripheral edge portion of said

sapphire ~~monocrystal~~ single crystal plate, and the working reference plane makes an index for forming on the plate surface a microcrack line parallel to the plane R.

7. A sapphire ~~monocrystal~~ single crystal plate according to claim 6, wherein said working reference plane is in the angle range within ±10° from the orientation completely parallel or vertical to the plane R.

8. A sapphire ~~monocrystal~~ single crystal plate according to claim 6, wherein said ~~monosapphire~~ sapphire crystal plate is a ~~monocrystal~~ single crystal sapphire substrate wherein elements such as semiconductor element, functional element or the like is to be formed on the major plane, and is to be formed said cleavage plane on the side face after the formation of the element.

9. A method of forming a cleavage plane of the sapphire ~~monocrystal~~ single crystal plate comprising forming microcrack line parallel to the plane R of the crystal on the plate plane of said sapphire ~~monocrystal~~ single crystal plate, and subsequently giving mechanical or thermal stressing on the plate surface near the microcrack line, thereby growing the cracks and cleaving along the plane R.

10. A method of forming a cleavage plane according to claim 9, further comprising previously forming the reference plane parallel or vertical to the R plate of the crystal on the peripheral edge portion of said sapphire ~~monocrystal~~ single crystal plate, forming vertically or in parallel to the

microcrack line on the working reference plane in the formation of the cleavage plane.

11. A semiconductor laser diode, wherein a semiconductor multilayer for forming the laser element is provided on the major plane of the ~~monocrystal~~ single crystal sapphire substrate, two opposite reflection end faces comprising the resonator of the laser beam in the multilayer is a cleavage plane connected to the cleavage plane along the plane R of the crystal of said sapphire ~~monocrystal~~ single crystal substrate.

12. A semiconductor laser diode according to claim 11, wherein said semiconductor multilayer is a multilayer of a gallium nitride system compound semiconductor of double hetero junction structure, the major plane of the ~~monocrystal~~ single crystal sapphire substrate is substantially parallel to the plane A, said cleavage plane of the substrate is comprised by 2.5 through 3.5° from the plane R of the sapphire crystal on the major plane and also is inclined in the direction from 59.5 through 60.5° from the plane C.

13. A method of manufacturing a semiconductor laser diode comprising forming semiconductor multilayer of the laser element on the major plane of the ~~monocrystal~~ single crystal sapphire substrate, then cleaving the ~~monocrystal~~ single crystal substrate and the multilayer along the plane R of the crystal, thereby making both the side cleavage planes of the

multilayer two opposite reflection end planes for composing the reasoner of the laser beam.

14. A method of manufacturing semiconductor a laser diode comprising forming a semiconductor multilayer of the laser element on the major plane of the monocrystal sapphire substrate, then forming microcrack line parallel to the plane R of the crystal on the reverse plane of the sapphire ~~monocrystal~~ single crystal plane, subsequently giving mechanical or thermal stressing to the plate plane near the microcrack line, thereby growing the cracks and cleaving the ~~monocrystal~~ single crystal substrate and the mutiplayer along the plane R, and making both the side cleavage planes of the multilayer two opposite reflection end faces for composing the reasoner of the laser beam.

15. A method of manufacturing of a semiconductor laser diode according to claim 14 further comprising forming the working reference plane parallel to or vertical to the plane R of the crystal on the peripheral edge portion on said ~~monocrystal~~ single crystal sapphire substrate in advance, thereby forming the microcrack line vertical or parallel to the reference plane when forming the cleavage plane.

16. A method of manufacturing a semiconductor laser diode comprising forming a multilayer of gallium nitride system compound semiconductor of double hetero junction structure of a laser element on the major plane of said

single crystal
~~monocrystal~~ sapphire substrate substantially parallel to the plane A by the major plane, then forming the microcrack line in a direction inclined by 2.5 through 3.5° from the plane R of the crystal, and also inclined by 59.5 through 60.5° from the plane C on the reverse plane of said sapphire ~~monocrystal~~ single crystal plate, subsequently giving mechanical or thermal stressing to the plate plane near the microcrack line, thereby growing the cracks, cleaving the ~~monocrystal~~ single crystal substrate and the multilayer, and making both the cleaved planes of the multilayer two opposite reflection end faces for composing the resonator of the laser beam.

Add C1